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MICA

In commercial usage, the term mica generally refers to the minerals muscovite and phlogopite. Although the United States is the world's largest consumer of mica, it produces only a small part of its requirements. From 13 to 35 percent of the smaller sizes of sheet mica and less than five percent of the mica splittings used in the United States are produced domestically. Domestic punch and scrap mica production is nearly sufficient to meet normal requirements. The production, processing, and preparation of sheet mica require an unusual amount of hand labor. Because of this, domestic production cannot compete with mica produced in certain foreign countries with low labor costs.

India and Brazil are the largest producers of sheet muscovite mica. Most mica splittings are produced in India where labor costs are low. Canada and Madagascar produce phlogopite mica while the United States is the largest producer of ground mica in the world. Domestic production of sheet and scrap mica in 1950 amounted to 69,650 short tons valued at $1,868,544. North Carolina and South Dakota were the leading mica-producing states during that year. Mica is also produced in Arizona, Colorado, Connecticut, Georgia, Maine, New Mexico, New York, New Hampshire, Pennsylvania and Virginia.

Mica has been produced intermittently in California since 1902. Virtually all of the California mica has been obtained from mica schist, commonly known as sericite schist, after the mineral sericite, a fine-grained, scaly variety of muscovite. Many rocks which are commercially known as sericite schist, however, are sufficiently coarse-grained to be classified as muscovite schist. Because of fineness of grain size, schist is used only as a raw material in the production of ground mica.

In California all mica schist is found in rocks of pre-Tertiary geologic age. Extensive areas of mica schist exist, having muscovite as the principal constituent. The mica schists in California commonly contain a high enough proportion of mica to be marketed without the removal of the other minerals. Production of mica schist in California, however, has not been great because of limited markets. Total recorded production of mica in California from 1902 to 1951 is $198,574.

Six properties have been responsible for most of the recorded mica production in California. The earliest production was from 1902 to 1904 from the Mount Alamo deposit in Ventura County where small amounts of ground mica, as well as sheet mica were obtained. Elsewhere in California, sheet mica has not been produced commercially. The most continuous production has been from sericite schist near Obilby, Imperial County. Other deposits from which mica has been produced include those in Inyo, Mono, Kern, and Mariposa Counties. Some vermiculite was mined from a deposit in Riverside County.

Mineralogy and Geology.

The mica minerals are essentially a group of complex aluminum silicates with an almost perfect basal cleavage. This group includes a number of distinct mineral species. By far the most important micas from a commercial standpoint are muscovite (H_2 KAl_3 $(SiO_4)_3$) and phlogopite ($(OH)_2$ KMg_3 $(AlSi_3O_{10})$). Other micas with some commercial importance are lepidolite ($(OH,F)_2$ $K,LiAl_2Si_3O_{10}$ (in part) and roscoelite ($H_2K(Al,V_3)$ $(SiO_4)_3$), which are sources of lithium and vanadium, respectively. Mariposite, a green chromium-bearing mica, is occasionally used as ornamental stone. Biotite (H_2K $(Mg,Fe)_3Al(SiO_4)_3$) and the chlorites (a group of soft micaceous alumino-silicates of iron and magnesium), which are the most common micas, usually have little or no commercial importance. Vermiculite is usually treated as a separate mineral commodity and is not generally classed with commercial mica. Vermiculite is a secondary mineral formed by the alteration of biotite and phlogopite micas. Expanded vermiculite is commercially important as an insulating material and lightweight aggregate.

The hardness of mica ranges from 2 to 3.5 and the specific gravity from 2.75 to 3.2. In general, mica is characterized by perfect basal cleavage, transparency, flexibility, and lustrous cleavage